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ADDENDUM TO AN EVALUATION
OF SEED AND CONE INSECT DAMAGE AT THE ERAMBERT,
OUACHITA, AND STUART ORCHARDS IN MISSISSIPPI,
ARKANSAS, AND LOUISIANA DURING 1975

U. S. FOREST SERVICE
Pineville, Louisiana

U. S. DEPARTMENT OF AGRICULTURE -- FOREST SERVICE
SOUTHEASTERN AREA, STATE AND PRIVATE FORESTRY
RESOURCE PROTECTION UNIT, FOREST INSECT AND DISEASE MANAGEMENT GROUP

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by

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INTRODUCTION

An evaluation of seed and cone insect damage at the Erambert, Ouachita, and Stuart Orchards was based on losses occurring during 1974 and 1975 (Overgaard et al., 1976). This is addendum to the above evaluation and includes information as to dates when insect damage occurred at the Ouachita and Stuart Orchards and gives suggested optimum spray dates for individual pine species at all three orchards based on this data.

METHODS

Methods are outlined in the previously mentioned evaluation.

RESULTS

Ouachita Seed Orchard

Greater overall losses occurred to shortleaf pine, *Pinus echinata* Mill., conelets than to cones at the Ouachita Orchard during the 1974-75 season (Fig. 1). In 1974 early damage peaked in May and was mostly associated with the Nantucket pine tip moth, *Rhyacionia frustrana* (Comstock), feeding. In 1975, most of the early damage recorded in June probably occurred during May when no inspection was conducted. Most of the conelets damaged in May had already fallen off by the time of the June inspection.

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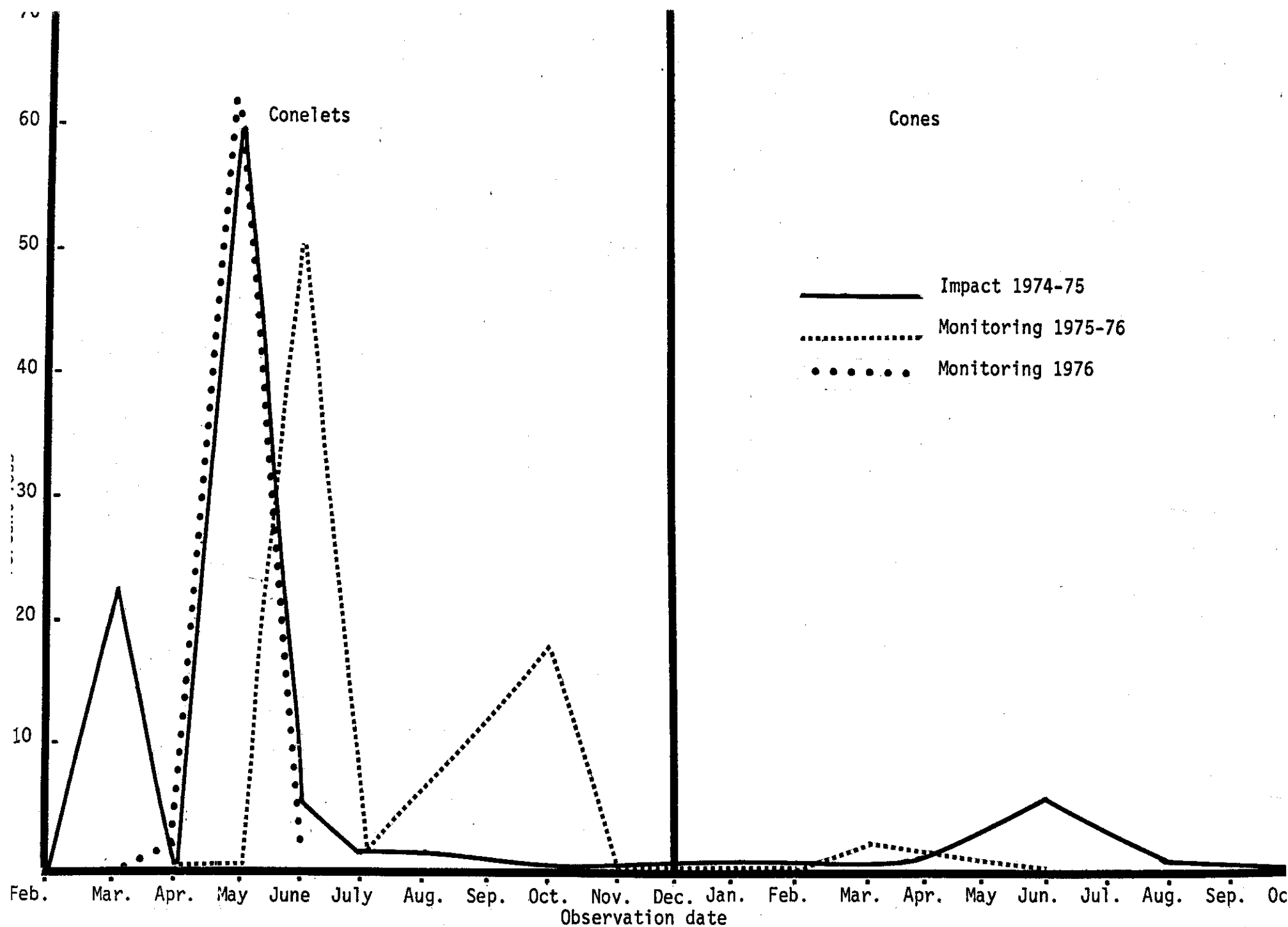


Figure 1. Percent shortleaf conelet and cone losses due to all causes at the Ouachita Orchard by month of inspection (February 1974 to May 1976).

An additional peak of 18 percent conelet loss, which did not occur in 1974, was noted in October 1975. Much of this late damage could have occurred any time between August 1 and October 1 since no inspection was made between these dates. Five percent out of the 18 percent damage was definitely attributed to coneworms, *Dioryctria* spp. Peak coneworm damage to second year shortleaf pine cones at the Ouachita Orchard in 1975 occurred in June and amounted to approximately 5 percent of the total 1974-75 cone crop.

Stuart Seed Orchard

Peaks of insect activity at the Stuart Orchard on loblolly, *P. taeda* L.; longleaf, *P. palustris* Mill.; shortleaf; and slash pine, *P. elliottii* Engelm. var. *elliottii*, conelets generally occurred in April, June, and September or October (Figs. 2, 3, 4, and 5). The only exception was an early peak on slash pine in March and the late peak on shortleaf from August through October.

The early peak of conelet losses on shortleaf pine at both orchards was mostly associated with tip moth feeding. Early peaks on other species of southern pines at the Stuart Orchard were due to undetermined insect species except for slash pine on which *Dioryctria* n. sp. (Zimmermani group) was the primary causal agent. Most of the midsummer conelet damage on loblolly and slash pines at the Stuart Orchard was attributed to coneworms, and most of the midsummer loss on shortleaf and longleaf pines was due to undetermined insects. Late season peaks in coneworm feeding on conelets were noted in September on loblolly, longleaf, and slash pines. This corresponded with the October peak at the Ouachita Orchard. Also, late season peaks occurred in the unknown insect category from September through October on longleaf pines. Much of this late season loss may have been seedbug associated with (*Leptoglossus* and/or *Tetyra*) feeding, since these were observed in high numbers during late summer.

DISCUSSION AND RECOMMENDATIONS

Apparently the best periods to control insects attacking conelets at the Stuart and Ouachita Orchards would be early spring, early summer, and late summer or early fall. According to data collected during February 1974 through June 1976, best treatment dates at the Ouachita would be one spray between each of the following dates: April 1-15, May 15-20, and August 15-Sept. 1. The following dates would apply for each species at the Stuart Orchard:

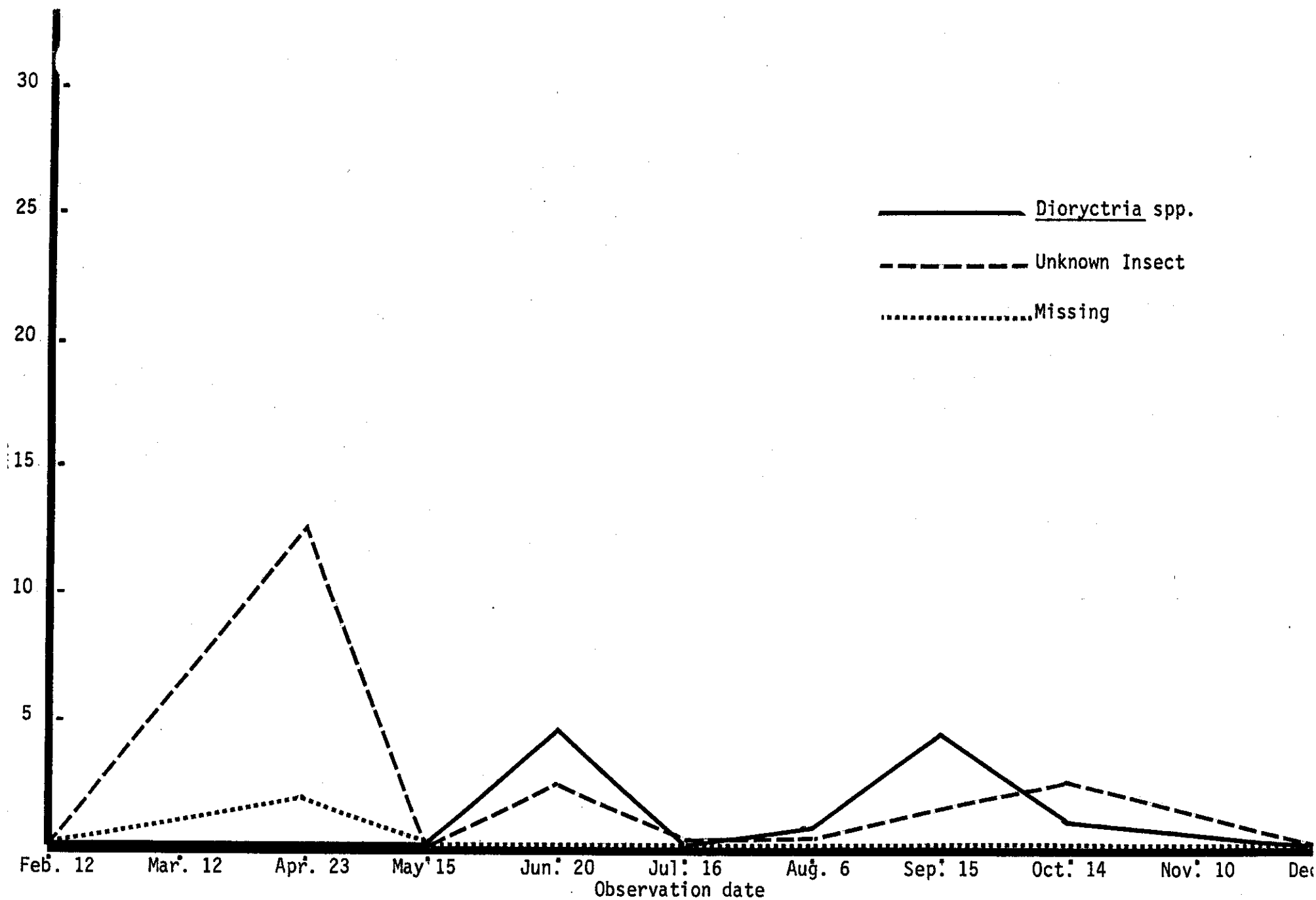


Figure 2. Conelet loss on loblolly pine at Stuart Orchard during 1975.

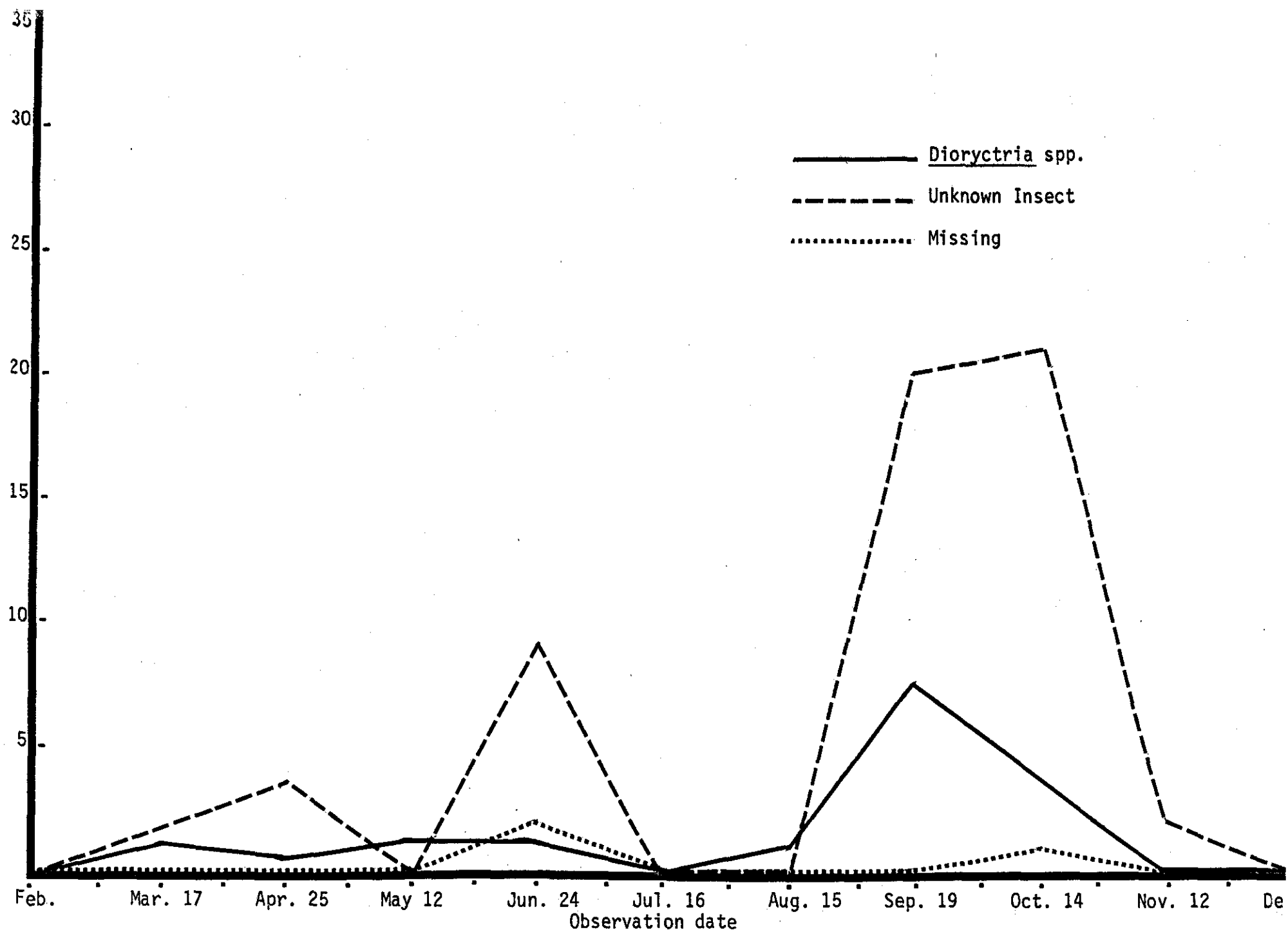


Figure 3. Conelet losses on longleaf pine at Stuart Orchard, LA (1975).

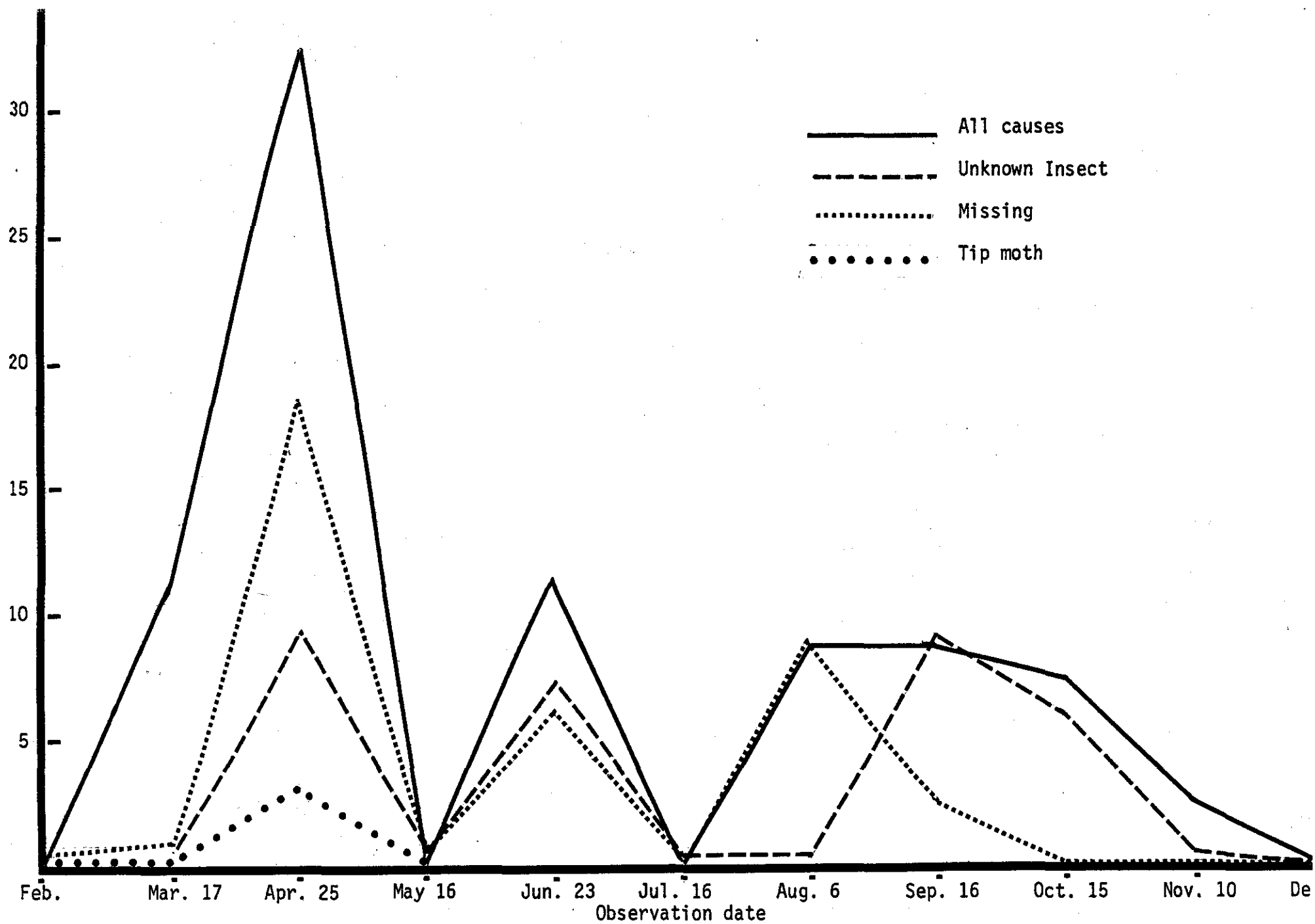


Figure 4. Conelet loss on shortleaf pines at the Stuart Orchard (1975).

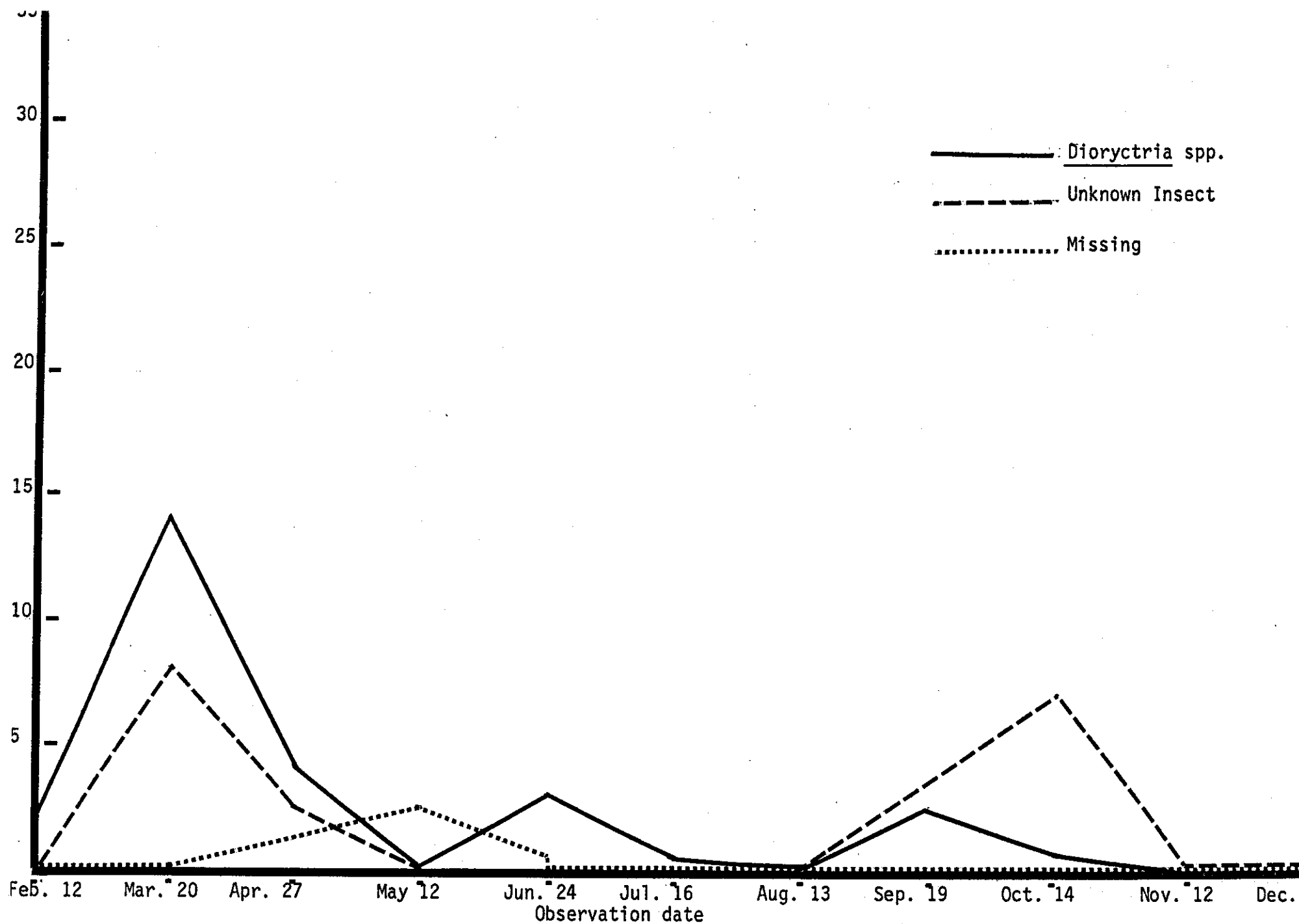


Figure 5. Conelet losses on slash pine at Stuart Orchard during 1975.

<u>Loblolly</u>	<u>Longleaf</u>	<u>Shortleaf</u>	<u>Slash</u>
April 1 ^{3/}	April 1	March 15	February 15
June 1	June 1	June 1	June 1
August 15	August 15	July 15	September 1

Unfortunately no impact data was collected at the Erambert Orchard. The optimum spray dates for the Erambert Orchard would probably be the same as those suggested for the Stuart Orchard since it is at approximately the same latitude as Stuart.

Guthion^{®4/} is registered for coneworm control at the rate of 6 pints per 100 gallons of water using a high volume sprayer and 30 pints per 100 gallons using a low volume sprayer, and can be used during the early summer and late summer or early fall treatments for coneworm control. However, no insecticides are registered for protecting first year conelets during the early season (February through April). Moreover, monitoring studies and field tests using Cygon[®] have not shown adequate protection of conelet damage on shortleaf or loblolly pines (Overgaard, et al., 1976).

Early season conelet loss on southern pines in Louisiana and Arkansas, except for tip moth damage on shortleaf pines, is largely associated with unknown insect or unknown causes. Therefore, studies to determine the cause of the early conelet loss on loblolly, longleaf, and slash pines should be conducted first. Once the insect or disease agents responsible for the damage are determined, then the process of screening and testing candidate pesticides for controlling these pests can begin. Field and pilot tests using foliar sprays and soil systemic insecticides should be conducted to determine their effectiveness and proper timing of application for protecting young shortleaf conelets from tip moth damage.

REFERENCES

- Overgaard, N. A., H. N. Wallace, C. Stein, and G. Hertel. 1976. An evaluation of Seed and Cone Insect Damage at the Erambert, Ouachita, and Stuart Orchards in Mississippi, Arkansas, and Louisiana during 1975. USDA, Forest Serv., SE Area, S&PF. Resource Protection Group, FI&DM. Rpt. No. 76-2-12.

^{3/} Dates based on a time period approximately three weeks before actual damage occurred.

^{4/} Mention of trade names does not constitute endorsement of the products. Other products containing the same ingredients may be as effective.

Overgaard, N. A., H. N. Wallace, G. D. Hertel, C. Stein and L. Drake.
1976. Incidence of the Nantucket Pine Tip Moth on Shortleaf
and Loblolly Pines in Seed Orchards Treated with Furadan®,
Cygon®, Di-Syston®, and Fertilizers. USDA, Forest Serv., SA,
S&PF, Resource Protection Unit, FI&DM, Rpt. No. 76-2-14.